

REMARKS

Reconsideration is respectfully requested.

Claims 1-19, 22-42 and 45-46 are pending.

- 5 Claims 20-21 and 43-44 have been canceled because the subject matter of claims 21 and 44 have been incorporated into claims 1 and 24 respectively. With the amendment of claims 1 and 24, the subject matter of claims 20 and 43 becomes moot.
- 10 Claims 15 and 38 have been amended to change the term "color ink" to "multivalent salt", thus correcting the basis for dependency on claims 1 and 24 respectively. No new matter has been added.
- 15 Claims 1-46 stand rejected under 35 U.S.C. 112, first paragraph, because the examiner alleges that the specification while being enabling for the specific organic acids specified in the application is not enabled for any type of organic acids including derivatives.
- 20 Furthermore, claims 1-46 stand rejected under 35 U.S.C. 112, first paragraph, because the examiner asserts that the claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventor had possession of the claimed invention.
- 25 In addition, claims 1-46 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Parazak in view of Zhu.
- 30 As presently claimed, the present invention relates to a pigment-based inkjet ink set comprising a black ink and at least one color ink, said black ink including at least one black pigment, at least one cosolvent, water, optionally at least one water-soluble surfactant/amphiphile, and a polymer, wherein said polymer comprises a hydrolyzed form of styrene-maleic anhydride copolymer and

- wherein said at least one color ink includes a component selected from the group consisting of multivalent salts and organic acids that interacts with said polymer at appropriate pH by rendering said pigment dispersed with said polymer in said black ink insoluble by transforming said polymer into a water-insoluble protonated form, and wherein said organic acids are selected from the group consisting of: polyacrylic, acetic, glycolic, malonic, malic, maleic, ascorbic, succinic, glutaric, fumaric, citric, tartaric, lactic, sulfonic, ortho-phosphoric acids and mixtures thereof.
- 10 In addition, the presently claimed invention relates to a method of controlling bleed between a black pigment-based inkjet ink and a color inkjet ink, said black pigment-based ink including at least one black pigment, said method comprising formulating said black ink with a polymer, wherein said polymer comprises a hydrolyzed form of styrene-maleic anhydride copolymer and
- 15 wherein said at least one color ink includes a component selected from the group consisting of multivalent salts and organic acids that interacts with said polymer at appropriate pH by rendering said pigment dispersed with said polymer in said black ink insoluble by transforming said polymer into a water-insoluble protonated form,
- 20 and wherein said organic acids are selected from the group consisting of: polyacrylic, acetic, glycolic, malonic, malic, maleic, ascorbic, succinic, glutaric, fumaric, citric, tartaric, lactic, sulfonic, ortho-phosphoric acids and mixtures thereof.
- .25 With the present incorporation of the phrase "and wherein said organic acids are selected from the group consisting of: polyacrylic, acetic, glycolic, malonic, malic, maleic, ascorbic, succinic, glutaric, fumaric, citric, tartaric, lactic, sulfonic, ortho-phosphoric acids and mixtures thereof" into claims 1 and 24 above, the examiner's concern in the first 112 rejection about the enablement of organic acid in claims 1 and 24, as well as the examiner's concern about the use of the term "derivatives thereof", is obviated. Basis for this amendment can be found in the specification and in canceled claims 21 and 44. No new matter has been added.

Furthermore, in claims 1 and 24, the phrase "that interacts with said polymer to control said black-to-color bleed" is replaced with "that interacts with said polymer at appropriate pH by rendering said pigment dispersed with said polymer in said black ink insoluble by transforming said polymer into a water-insoluble protonated form". With this change the examiner's concerns are obviated which are expressed in the second 112 rejection about alleged subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventor had possession of the claimed invention. The amendment has basis in the specification on page 2, paragraph [7] and page 8, paragraph [30]. No new matter has been added.

Applicant asserts that it cannot be alleged that the combination of Parazak with Zhu achieves or suggests the applicants' claimed invention. In fact there is no motivation for one skilled in the art to combine Parazak and Zhu at all.

The ink described by Zhu is an ink typical of the continuous inkjet process which is the primary technology in which the assignee of Zhu, VideoJet, is involved. Although the printing system is not specifically described in Zhu, the references cited in the patent describe continuous inkjet systems and not drop-on-demand inkjet systems. Several of the best examples of these references are included with this amendment. For example in Example 1 of Zhu, the ink contains 8% of polymer (20% polymer in Joncyl which is in the ink at 40%); 8% of Teflon fluoropolymer wax and 9% carbon black acrylic paste. This amounts to an ink that is 25% solids. The other examples of Zhu are all consistent with such a large amount of solids in the ink. Such inks are not jettable by the typical HP drop-on-demand thermal inkjet process used in Parazak, rather they are jettable in a typical continuous inkjet system.

In contrast, Parazak teaches a typical drop-on-demand ink. In Example 4, Parazak describes the black pigmented ink to which the polymer has been added. As stated in Parazak, the ink is jettable from the drop-on-demand printhead manufactured by HP. The ink in Example 4, which is typical of the Parazak

inks, contains 3% of CaboJet Carbon Black and 1% of polymer, with a total of only 4% of solids. Thus, the Parazak ink has less than one-sixth the solids of Zhu, the typical continuous inkjet system ink. The Zhu ink could not be used in the same system as Parazak. One skilled in the art reading Parazak and

5 Zhu would immediately understand the significant differences between the two inks and thus would not be motivated to combine the teachings of the two patentents.

In view of the above amendments, the applicants respectfully assert that the
10 112 and 103(a) rejections should be withdrawn and that the presently claimed invention is allowable.

Applicants therefore request that the above rejections be withdrawn and that the present application be allowed.

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Respectfully submitted,

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